The integration of the third generation balanced scorecard with a student loyalty model to enhance financial performance in higher education

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Abstract

We have developed a set of appropriate performance evaluation measurements for the Private Higher Education (PHE) sector, based mainly on the integration between the third Generation Balanced Scorecard (3rd GBSC) and a Students' Loyalty Model (SLM). We describe the process of the development of customers' (students') loyalty, taking into consideration the improvement of the quality education process by increasing students' satisfaction, loyalty and financial performance respectively, by improving key performance indicators (KPIs) of the 3rd GBSC. Furthermore, we pursue a case study methodology of the application of the 3rd GBSC integrated with a SLM at Egypt's Canadian International College (CIC). We also investigate students' satisfaction of the CIC's Faculty of Engineering. We find that the application of the suggested model has a significant association with the improvement of the CIC's KPIs related to Education Quality (EQ). Furthermore, the application of this integration model increases the anticipation of profitability.

Keywords: 3rd Generation of Balance Scorecard (3rd GBSC); Student Loyalty Model (SLM); Higher Education; Key Performance Indicators (KPIs).

1. Introduction

We aim to reveal, through the application of the integration model comprising of the 3rd Generation Balanced Scorecard (3rd GBSC) and a Student Loyalty Model (SLM), an improvement to Key Performance Indicators (KPIs) of Education Quality (EQ); in turn, this leads to an increased anticipation of the CIC's[1] profitability. In addition, the majority of the research focuses on the application of the original generation of the Balanced Scorecard (BSC) in the higher education sector (e.g. Chen et al. 2006 and Ismail and Al-Thaoiehie 2015) and the improvement of KPIs (Wu et al. 2011). None of these studies examine how and to what extent the application of 3rd GBSC consistently with SLM, influences the different quality factors in the Higher Private Education (HPE)' institutional education process.

This paper uses the CIC as a case study, which is one of Egypt's HPES institutions. In a recent and highly relevant piece of multi- application BSC research, based on the government's HES, Farid et al. (2008) examine the application of BSC based on the key characteristics of Italy's HES. In addition, Ismail and Al-Thaoiehie (2015) used a case study to examine the application of BSC based on the recommendation of KPIs in Saudi Arabia's private and public universities. This study examines the significance of improving EQ KPIs and the application of an integration model in the CIC. It is the first contribution of emerging economies in general and Egypt in particular. We are motivated to examine the model in the context of the CIC as it was a new campus and its managers ought to have been aware of the benefits of applying the suggested model in leading to the establishment of a strong infrastructure. We also have access to the CIC's data. The study aims to answer the following research questions:

Q1. Does the integration between the 3rd GBSC and SLM improving the CIC's KPIs?

Q2. To what extent, do the results of the new integration model (the 3rd GBSC with a SLM) differ from the CIC's current performance measurement of EQ?

Q3. Does the application of an integration model improve the quality of the CIC's education process?

Q4. Does the application of the 3rd GBSC with a SLM increase the anticipation of the CIC's profitability?

We find that the application of the suggested model has a significant association with the improvement of the CIC's EQ KPIs. We also find that the application of this model increases the anticipation of profitability.

[1] The Canadian International College (CIC) is one of Egypt's Private Higher Education (PHE) institutions. It is a new branch of the CIC group, which was established in 2012. This study focuses on the Faculty of Engineering, which is linked to Ministry of Higher Education.

This paper makes several contributions to research on BSC. First, although prior research focused on the application of the original generation of BSC in all HE sector, our paper is the first to examine the application of the 3rd GBSC in the HES. Second, this paper provides the first evidence that the integration model between the 3rd GBSC and a SLM reveals a significant association between this suggested model and the improvement of EQ KPIs. Furthermore, our paper introduces a new tool to anticipate the financial performance in the PHE sector. Finally, this paper evaluates the students' satisfaction of the CIC's current system, captured through a SLM, and, after the application of the integration model, it measures the KPIs' weighted values in motivating managers to respond sensibly by reporting their expectations of profitability.

Literature Review on the Balanced Scorecard in the Higher Education

There is a massive literature on the use of the BSC in many sectors. The reviewed literature shows that numerous studies examined the effectiveness of the BSC in HES. Ismail and Al-Thaoiehie (2015) found that the top ranked KPIs in the education sector are those related to the customer and internal business process perspectives of 1st GBSC. They did not find similar results for indicators related to the learning and growth and financial and economic perspectives of the same generation of the BSC. Furthermore, they noticed that most indicators had significant differences according to the type and age of the universities. Ismail and Al-Thaoiehie (2015)' paper extends previous studies on measuring performance excellence in the HE sector by considering a set of KPIs which fit educational systems in emerging economies in general and Saudi Arabia in particular. Similarly, Sudirman (2012) found that BSC was a performance management system which could be used appropriately to improve a higher education institution's accountability by translating its vision, mission and strategy into a series of performance indicators which drive change towards the improvement of Hasanuddin University, in Indonesia. Furthermore, Sordo et al. (2012) found that the application of BSC in Italian university can provide the following:

i. A strategic vision in order to systematise the information that the rectors and academic staff will have to use.

ii. The creation of both a guide and a strategic reporting system;

iii. An external communication of the strategic objectives achieved in the context of an increased competition between universities.

In addition, Aljardali et al. (2012) created a framework that enables PHE Lebanese institutions to implement the BSC. They argue that deans of Lebanese universities could begin the process of implementing the BSC and monitor the implementation process to avoid any potential failure.

Wu et al. (2011) found that three universities in Taoyuan, in Taiwan, needed to prioritise improvements to their KPIs. It conducted that a "learning and growth" (BSC) perspective is a significant influencing factor that would affect the other three perspectives of BSC.

Extending the integration of BSC with other tools, Beard (2010) found that the integration between the management system and BSC ought to be considered for application in HE sector. In particular, Beard looked at BSC built on a strategy- based management system to clarify the vision and translate the strategy. In addition, Negash (2008) developed a goal-congruent BSC for a professional academic unit. This showed that financial decentralisation reduced the tensions between teaching and research on the one hand and between academic units and central administration on the other hand and reflected the improvement of South African universities' ratings in credible international ranking systems. Furthermore, Farid et al. (2008) illustrated the application of BSC as a powerful measurement and assessment system in universities and higher education institutes. Continuing with the global application of BSC, Silvia (2008) explored the possibility of application of BSC in Romanian universities.

Umashankar and Dutta (2007) found that the BSC offers - an opportunity for HE sector in India - to formulate a cascade of measures to translate the mission of knowledge creation, sharing and utilisation into a comprehensive, coherent, communicable framework for external stakeholders. In addition, Chen et al. (2006) found that the management team in the Taiwanese's HE sector should support both BSC and other management systems so that the implementation outcome is both promising and successful. By emphasising missions and visions, the authors revealed that the financial perspective was ranked higher than other BSC perspectives.

In accordance with the application of BSC as a tool to measure performance in the HE sector, Papenhausen and Einstein (2006) found that the BSC was well suited to the HE sector and enabled a wide variety of measures to be aligned with its unique mission and strategy. Consistent with the achievement of competitive advantage through BSC implementation, Siakas et al. (2005) found that the BSC at Greece's Alexander Technological Educational Institute of Thessaloniki aligned goals, strategies, measurements of performance and designed KPIs for the customer's perspective (student's satisfaction) in relation to the BSC. In addition, Lawrence & Sharma (2002) evaluated the application of the BSC with Total Quality Management (TQM) in public universities in order to create a greater efficiency and promoted effectiveness in the HE sector. Finally, Lee et al. (2000) examined the integration of a Strength, Weakness, Opportunity and Threatens (SWOT) analysis and BSC in vocational education (VE). They use Quality Function Deployment (QFD) methodology to develop an education

strategy to achieve excellence performance. They found that the proposed model was effective and useful in the strategic planning of VE.

None of the above studies consider the 3rd GBSC and its potential impact on the anticipation of profitability. We consider this to be an important gap in the literature. We aim to fill this gap. We believe that the application of the 3rd GBSC to be more compatible in the HE sector compared with other BSC generations.

2. The 3rd Generation of Balanced Scorecard

The BSC is initially an approach to measurement, and the term was originated by Robert and Kaplan (1992)[2]. Cobbold et al. (2004) argued that the 3rd GBSC has more relevant strategic objectives, measures and targets. It allowed the management team to see the whole picture and, made active use of the generated performance data, to ensure it was manage more effectively. Furthermore, Rajesh et al. (2012) argued that the 3rd GBSC is an approach used to achieve the desired strategic goals by using a quick design process in which it is easy for executive managers to participate - this is a direct consequence of the inclusion of an additional element to the design of the BSC. This element is the Destination Statement (DS). Andersen et al (2004) reveal that the 3rd GBSC is the modification of the original BSC after the inclusion of the DS. Cobbold and Lawried (2002) argued that the DS is completed to the 3rd GBSC to re-designing and developing the original BSC.

Hammes (2010) defined the DS as a statement that included details of all entity activities and outcomes according to a cause-and-effect relationship in order to reap the optimal results of KPIs. Most management teams find that it is easy to develop a DS (since it describes what managers want or need to achieve, rather than how it will be done). On completion of a strategy map and scorecard the question is invariably asked as to what the organisation or unit will look like once strategic developments have been undertaken. Barney et al, (2004) claim that this is an effective method for ensuring that the organisational plan is well constructed. It is further argued that the DS is a specific description of short-term development plan which aims to assist target setting (Barney et al., 2004). Therefore, it allows for a more accurate performance measurement and is easier to implement than the current system.

[2] Hoque (2014) provides an excellent review of the major developments of BSC over the past 20 years. In our study, however, we only focus on the application of the 3rd generation of BSC.

3. Students Loyalty Model (SLM).

This model builds on the increased numbers of both public and private HE sector which resulted in the industry becoming relatively competitive (Mohamad & Awang 2009). The situation calls for HE institutions to focus on establishing a strong corporate image and provide student satisfaction to secure their loyalty. Delivering quality services will lead to student satisfaction and loyalty, as follows:

4.1 Satisfaction

Bentley et al. (2013:17) defined job satisfaction as "the pleasurable emotional state resulting from the appraisal of one's job as achieving or facilitating the achievement of one's job values". In accordance with a student's satisfaction measurable, students are the prime customers of the universities and it is understood that they think of universities in similar way to commercial services (Ragavan & Mageh 2013). For example, Kallio & Kallio (2014) argued that students wish to have more choices regarding the subjects that are offered to them, an efficient and effective registration processes and extended access to university facilities. In addition, they argued that the success of the university is increasingly measured in terms of students' satisfaction rather than any other quantitative output. Additionally, Chen et al. (2014) explained that the satisfaction measures are leading indicators of future financial performance as measured by higher revenue and profit and lower warranty costs.

4.2 Loyalty

Mosahab et al. (2010) argued that the customer (student) loyalty is described by their future intentions towards an organisation. Future intentions are grouped into two categories, namely, economic behavioural and social behavioural intentions, which are defined as the students' intentions to recommend the university to their fellow students.

4.3 Relationship between Satisfaction and Loyalty

Customers' (Students') satisfaction has an influence on customer loyalty. Smith and Worsfold (2014) argued that the service quality correlates with students' satisfaction and this leads to an increase in students' loyalty. Further, satisfaction levels can be enhanced by increasing the frequency and quality practice in relation to learning outcomes. Therefore, Hafeez and Muhamad (2012) revealed that there was considerable debate about the best way to define service quality in higher education since, universities were operating increasingly competitive environment.

4.4 Integration Between the 3rd Generation Balanced Scorecard and Student Loyalty Model

In accordance with the design of the 3rd GBSC, Hammes, (2010) revealed that, in the 3rd GBSC model, the four perspectives were replaced by an outcome perspective which grouped together the financial and customer perspectives with an activity perspective to combine internal business processes with learning and growth. This is an important link which shows the cause-and-effect relationship between perspectives in order to achieve the desired goals. In addition, our study builds on improving EQ KPIs based on the cause-and-effect- association between students' satisfaction and students' loyalty. As shown in the strategic linkage model in Figure1, we divided this association into two perspectives of the 3rd GBSC (activities and outcomes).

INSERT FIGURE 1 ABOUT HERE

According to this model of the integration between 3rd GBSC and SLM, we suggest the following improvements to the EQ KPIs.

4. Key Performance Indicators Model Development

As has been argued by Bentley et al. (2013), trying to find the solution by further increasing the use of and dependency on casual staff may have serious consequences for quality and cohesion within institutions (universities). By increasing productivity through the better use of staff, technology, innovative teaching and learning methodologies, this study aims to improve technology, innovative teaching and learning methodologies through the development of EQ KPIs. We follow Masui et al. (2012) to develop EQ KPIs for the CIC. Our proposed model is built on a combination of the 3rd GBSC and SLM based on a trend analysis of Students Satisfaction Form (SSF) performance measurement and comparative data based on the internal benchmarking of CIC's centralisation campus[3]. In relation to this, Meek & Lee (2005) discussed the effectiveness benchmarking in influencing culture and practice within the universities through internal learning, and building networks with professional colleagues (faculties) in related fields. In addition, Micheli & Mari (2014) identified the KPIs are seen as descriptions of key success factors related to institutions' (universities') sustainability. Each KPI has a different degree of importance and is weighted by using the Analytic Hierarchy Process (AHP). On the other hand, each KPI's points is based on its trend over the past five

[3] It is the centralisation campus of the CIC group which was established in 2003.

years and its current level compared with benchmarking performance. The proposed model contributes to measuring and explaining institutional success by using multidimensional KPIs. Also, it is a tool for organisational self-assessments. The proposed model consists of the following criteria:

i. Identification of KPIs through the use of SSF.
ii. Building a system of solution depending on the liner programming method.
iii. The optimal private educational module, which is derived from the CIC's quality assurance regulations.
iv. Assessing EQ KPIs through internal benchmarking

5. Research Method

This paper conducts an experiment with applied integration between the 3rd GBSC and SLM through a case study methodology based on qualitative and quantitative approaches. Using SSF, the paper assesses the reliability of the measures used in the questionnaire, which is submitted to the quality assurance department of the CIC and examined the roll of EQ. We distribute 200 SSF questionnaires to the Faculty of Engineering, Specifically Civil Engineering specialisation students on financial accounting course at the end of the second semester in the academic year 2013-2014. Of these, we collect 89 SSFs from students, as shown in Tables 1 and 2, which represented a response rate of 44.5% In comparison with Ismail and Al-Thaoiehie (2015), where there were 37.4% usable questionnaires. We considered the estimation of suggesting KPIs to be related to prior research (e.g. Ismail and Al-Thaoiehie 2015). Consistent with the application of integration model, we develop a model of KPIs measurements according to the CIC's quality assurance department regulations. We built the KPIs model as a combination of the following factors:

i. Ministry of Higher Education (MHE) requirements;
ii. Canadian International College (CIC) requirements;
iii. Trend analysis of Education Quality Performance Management (EQPM)/KPIs; and
iv. Comparative data of CIC's internal benchmarking.

INSERT TABLES 1 ABOUT HERE

INSERT TABLES 2 ABOUT HERE

KPIs are determined as descriptions of key success factors related to the CIC's sustainability. In addition, for benchmarking, Meek et al. (2005) argued that the most useful outcomes of benchmarking in practice is the potential strengthening of an institution that can result from a strategic review of a university's performance and market share in order to aligning the KPIs with the university's strategic goals. Therefore, our suggested model uses KPIs as a systematic and logical way of measuring a specific performance (EQPM). Furthermore, KPIs make up individual measurements of performance against targets or goals. In order to view this performance as part of the overall business (education) performance, we collated the KPIs into groups of SSF. In turn, we categorised these KPIs and highlighted the need to use internal benchmarking, in order to examine the application of the integration model and the development of KPIs.

6.1 Empirical Analysis Using SHILP Model

This model builds on a linear programming concept in order to achieve the optimal solution for the proposed evaluation. We conduct an empirical analysis by taking the optimal outcomes of the five categories in the SSF. We focus on optimal outcomes which are reflected in maximizing profit. This model builds on the relationship between optimal outcomes and maximising profit by using performance measurement as a constant factor (or dependent variable) (The exam levels were acceptable and the language used in the questions was clear). This was because, according to the CIC's management and quality assurance unit view, as stated in the interviews shown in table 3, this was the most objective performance measurement for the CIC's students. Furthermore, we selected the CIC's managers, shareholders and quality assurance unit for our interviews to aim for reasonable results regarding the application of an integration model in the CIC. In addition, the mathematical model detects variable cells for the five categories in the SSF and it derives the constraints cells SSF by calculating the optimal outcomes for each one, every category of performance measurement in SSF takes a rank number[4], this leads it to fulfil the SSF categories as follows: course (x1) $$$ 18 , course material(x2) $$$ 16 , professor (x3) $$$ 17 , e-learning (x4) $$$ 18 and teaching assistants (x5) $$$ 19.

[4] These ranked numbers were divested from the SHILP programme software.

INSERT TABLE 3 ABOUT HERE

The following equations are structured in SHILP model:

KPI1: **S**atisfaction.

KPI2: **H**ighly competitive advantage

KPI3: **I**ncreasing ROI.

KPI4: **L**oyalty.

KPI5: **P**rofitability.

On the basis of the collected professional questionnaire and interviews with the CIC's management, the following is the proposed linear programming formula of SHILP model:

Maximise:

$$P = \sum_{j=1}^{k} c_j x_j \ ,$$

Subject to:

$$\sum_{j=1}^{k} w_{ij} x_j \geq, \sum_{j=1}^{k} w_{ij} \ ; \quad i = 1, n$$

$$x_j \leq 5mN; \quad j = 1, k$$

Where:

x_j : Decision variables;

c_j : Cost of KPIs;

w_{ij} : Weighed values of KPIs

n: number of KPIs' items

k: number of satisfactions' categories

m: number of satisfactions' subcategories

n: volume of students' samples

In addition, we suggest that KPIs are developed further. As shown in Table 4, the names of the basic categories of the SSF are Course, The Course Material, Textbooks, Handouts, and

Slides", Professor, E-Learning/ Course Management System (CMS) and Teaching Assistant / Lab Assistant. Furthermore, we arrange the causality structure to increase profitability by increasing both the students' satisfaction and students' loyalty, respectively, from KPI1 to KPIs5. This research also introduces a weighted cost for the SSF categories as follows: W11 (aggregation of strongly agree response of x1); W12 (aggregation of agree response of x1); W13 (aggregation of neither agree nor disagree response of x1); W14 (aggregation of disagree response of x1); and W15 (aggregation of strongly disagree response of x1). The same procedures are used for the other SSF categories. Furthermore, we collect the total cost for each category from C1 to C5 to fulfil the CIC's formal financial reporting requirements. This report aims to offer a glimpse into the broad range of the College's activities; the development of its resources; and the strength of its financial performance in relation to its stated vision and mission. Further, this report is created by the student affairs department, academic affairs department, department of international affairs and quality assurance department.

INSERT TABLE 4 ABOUT HERE

6.2 Developing a Model of Weighted KPIs

Consistent with the suggested SHILP model, Figure 2 reveals the causal and effectual relationship based on developing KPIs and the application of the 3rd GBSC conjoined with SLM. Therefore, we examine this suggested model for the financial accounting course to aggregate its results. Also, we refer to the plus and minus points of the performance results compared with internal benchmarking to strive to achieve a high competitive advantage and the anticipation of profitability.

6.3 Optimal Outcomes of SHILP model

Table 5 shows the establishment of total influence of the 3rd GBSC perspectives (activities and outcomes) integrated with SLM for developing KPIs. According to the SHILP model, it computes optimal outcomes for the five categories as follows:

-The number of categories in the SSF is five;

-The result of the first one x1 is (8010); and, we could strive for the optimal outcomes for each category by pursuing the same treatment. In accordance with the above treatment of optimal outcomes, the model assesses the categories' cost for the course (x1) as (1,602). Furthermore, we assess the KPIs' reliability by aggregating the weighted value from KPIs 1 to 5 divided by costs to reveal the KPIs weighted value of financial accounting course before applying SHILP model.

Table 5 also shows that the mean weighted value of target optimal EQ outcomes for the financial accounting course compared with the currently weighted value of cost before applying the integration model.

INSERT TABLE 5 ABOUT HERE

6.4 Key Performance Indicators: Weighted Values of the Financial Accounting Course

Table 6 shows the estimation of the KPIs' weighted value before applying the 3rd GBSC with SLM according to the aggregation of fives responses in the SSF divided by the total cost for each category. Through the school of hierarchy BSC structure, this model reveals the weighted value of KPIs and the estimated cost of the CIC's current performance measurement system.

INSERT TABLE 6 ABOUT HERE

6.5 Key Performance Indicators: Total Activities and Outcomes

Consistent with the estimation of the current performance measurement for EQ, Table 7 shows the weighted value of total activities and outcomes in accordance with an estimation of CIC's current PM. Therefore, this study considers the cost of the five categories is a weighted value of activities and the aggregation value relevance[5] is the number of total activities plus the outcomes. Consequently, we assess the reliability of measuring the weighted value of outcomes.

INSERT TABLE 7 ABOUT HERE

6.6 Reliability Test

In this section of the empirical study, we assess the reliability of the SHILP model targets from the application of the integration between the 3rd GBSC and SLM by examining the reliability and validity of the research questionnaire. In addition, we assess the optimal outcomes of the five categories in the SSF and the benchmarking outcomes for evaluating the plus and minus points in the current EQPM in the SSF.

6.6.1 Reliability of the questionnaires

Each questionnaire contains 54 PM from the SSF of the financial accounting course at Faculty of Engineering in the CIC. The questionnaires were distributed among students. Following

[5] This value was divested from SHILP programme calculations.

Valmohammadi and Servati (2011), we use a Likert scale (ranging from 1 to 5) in our questionnaires. Consistent with Pedro & Franco (2015), we use the Statistical Package for the Social Sciences (SPSS) software to examine the reliability of the questionnaire. . Internal consistency is measured by using the reliability of each coefficient such as Cronbach's Alpha (McAuley and Courneya 1994). We compare the coefficient correlation of the constant factor (question number H12) in SHILP model and all categories questions. The results were 0.32 (H12 with x1 PM), 0.36 (H12 with x1 and x2 PM), 0.54(H12 with x1,x2 and x3 PM), 0.48(H12 with x1,x2, x3and x4 PM), and 0.53 (H12 with x1,x2,x3,x4and x5 PM). As shown in table 8, it can be concluded that the reliability of the questionnaire is acceptable in the beginning but improvements need to be made to PM and KPIs to increase the result of Cronbach's alpha. Furthermore, the results show that the correlation of coefficients increases with the numbers of SSF categories, which leads to an increase in the reliability of the questionnaire and we expect that the correlation of coefficients will increase when the KPIs of the SSF are developed.

INSERT TABLE8 ABOUT HERE

6.6.2 Validity of the questionnaires

The validity of a measure refers to the extent to which it measures what it is intended to measure. Valmohammadi et al. (2011) argued that the content validity is not evaluated numerically, but it is judged subjectively in relation to the different categories in the study. So in this study five categories of the SSF were settled. The selection of the SSF categories aligned with the desired goal of the CIC's financial performance, i.e. increasing students' loyalty and the CIC's profitability respectively.. As Williams and Rassenfosse (2014) considered the correlation coefficient is used to measure the degree of correspondence between sets of values where the points on the measurement scale are not equidistant. It is used with non-parametric data - either two ordinal variables or an ordinal and an interval variable. As shown in Table 9, the correlation coefficient for the SSF questionnaire, question (H12) is chosen as the main one, in SHILP model, to identify the connection with all other PM in the SSF. In addition, Pedro et al. (2015) stated that the correlation between two variables reflects the degree to which variables are linearly related. The coefficient range from +1 to -1. The correlation of +1 indicates that there is a perfect, positive, linear relationship between the variables.

In table 8, the results show that the highest coefficient is 0.991 for H12. Therefore that result ensures that our constant factor (H12) was taken in SHILP model.

INSERT TABLE9 ABOUT HERE

6.7 Developing Key Performance Indicators in SHILP model

This section provides the estimation of the weighted value of KPIs after applying the new model. It is designed to evaluate the weighted value of new KPIs after testing the questionnaires respondents' opinions in the SSF on the suitability of the proposed KPIs related to EQ. Furthermore, we evaluate the new KPIs after testing many of the respondents' interviews regarding the CIC's management. Our study reveals the comparison between the oldest established KPIs and the new ones in order to reach the optimal outcomes through the integration model. As shown in Table 10, the new weighted value activities and KPIs outcomes, based on optimal outcomes, are mostly different from the weighted value of the oldest KPIs, based on aggregating value of KPIs. It is an indication of developing KPIs through the integration model based on optimal outcomes which could lead to an improvement in the PM of EQ.

INSERT TABLE10 ABOUT HERE

6.8 Total Activities and Outcomes in the 3rd GBSC Key Performance Indicators

In accordance with the estimation of new KPIs in the 3rd GBSC with SLM model, this study conducts an analysis to determine the new weighted value of outcomes based on optimal outcomes. Table 11 shows the estimation of activities' weighted values is considered to be the relevant to the weighted value.

INSERT TABLE11 ABOUT HERE

6.9 Optimal Benchmarking Outcomes and Outcomes of 3rd GBSC

Finally, Table 12 shows the results of the SHILP model. Therefore, the CIC can see that the plus and minus points of the SSF for the financial accounting course, in (x1) the optimal outcomes percentage is 62%, compared with a benchmark (x1), which is 80%. Further, this model presents an opportunity to improve KPIs through the integration between the 3rd BSC consistently with SLM, and it presents a sensible contribution to the anticipation of

profitability, as a result of financial performance in the near future. By improving KPIs, the CIC's management can start to budget to carry out their roles rather than relying purely on self-financing. Then, all budgets are directed towards students' satisfaction services and improving EQ.

INSERT TABLE 12 ABOUT HERE

6. Discussion and conclusion

Our study is consistent with prior research (e.g. Ismail and Al-Thaoiehie 2015; Chen et al. 2006 and Wu et al. 2011), who suggested the development of PM and KPIs in the HE sector. It builds on the improvement of KPIs in the Private HE sector, in contrast to the literature mentioned above, as the purpose of this paper was to develop, in relation to Egyptian's private HE sector, performance evaluation measurements based mainly on the 3rd GBSC through integration with SLM. Moreover, we explained the guarantee that the successful application of the integration model, would be achieved by developing KPIs at the Faculty of Engineering in the CIC. Our findings revealed that the application of the suggested model would lead to a significant association in improving the CIC's KPIs in relation to EQ. The study also found that the application of this model would increase the anticipation of profitability. We offered the first integrated model of developing EQ KPIs based on the 3rd GBSC since, before now, it had not been developed in Egypt's HPES. Furthermore, it is the first contribution of emerging economies in general and Egypt in particular.

With regard to the perspective of separate KPIs in relation to activities and outcomes in the 3rd GBSC, we collected the SSF for 89 students from the 200 which were distributed to the students in the Faculty of Engineering. Furthermore, we suggested KPIs for PM from the SSF of the financial accounting course. We distributed these KPIs to activities and outcomes in the strategic linkage model in DS of the 3rd GBSC with SLM. Furthermore, with regard to the SHILP model, the optimal outcomes expressed on the optimal weighted values of the SSF categories, led to revealing the optimal percentage of these categories compared with the SSF cost. This case study provided the CIC's management with the whole view of weighted average KPIs, which were divided into activities and outcomes in the SSF. Therefore, the SHILP model revealed an improvement of the KPIs and PM in the SSF. A further point deserves consideration: in accordance with the internal benchmarking concept in the SHILP model, this case study enabled us to reveal the plus and minus points of KPIs and PM of SSF categories in the CIC. Consequently, the CIC's management can compare budget to performance before and

after applying our suggested model. Finally, we conclude that our model is useful for improving EQ KPIs. It also presents a new tool to forecast the profitability of CIC. .

We offer some suggestions for future research. We recommend that a further study of 3rd GBSC could be directed towards forming a comprehensive strategy map through a more detailed analysis of the causality structure amongst KPIs used to increase profitability in private universities. We also recommend that further study could investigate external benchmarking concept in SHILP model in order to reveal the plus and minus point of whole education process in different faculties and to re-design the EQ performance measurement system through applying the 4th GBSC.

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Figure 1: The strategic linkage model in Destination Statement of 3rd GBSC

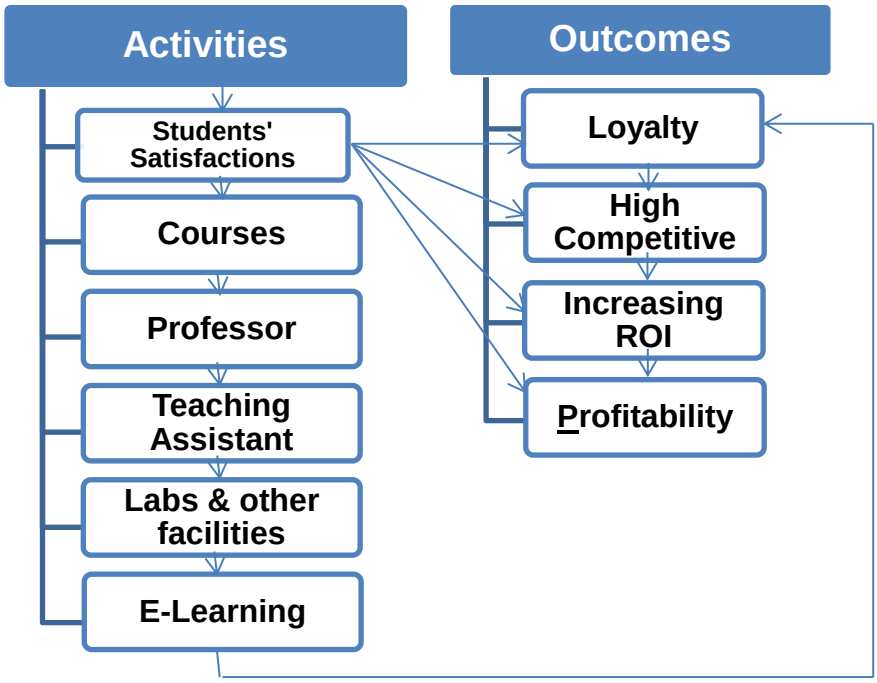

Figure.2: Developing KPIs for CIC – reasonable relationship Engineering School at Zayed Campus

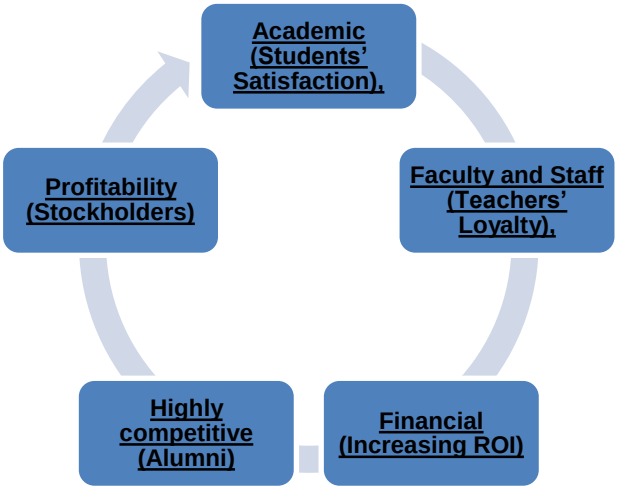

Table 1: The sample

	N	%
Initial questionnaires	200	100%
Returned questionnaires	100	50%
Less: questionnaires with missing data	11	5.5%
Usable questionnaires	89	44.5%

Table 2: Sample description

Sample	Academic year	Faculty/ specialisation	Time	Age	Living area	Grads	No. (SSF)	Per percent
Students	The first level	Faculty of engineering / civil specialisation	1st June, 2014	From 18 to 20 years old	Cairo	Mixed Grads (satisfaction/good / very good/excellent)	89	44.5%

Table 3: The interviews sample

Sample	CIC's management	CIC's shareholders	CIC's quality assurance unit
Initial interviews numbers	12	6	25
Initial interviews per cent		100 %	
Less: interviews with missing responses	4	3	5
interviews with missing responses per cent	33.3%	50%	20%
Usable interviews numbers	8	3	20
Usable interviews per cent	66.7%	50%	80%

Table 4: KPIs Outcomes

Categories	KPI1	KPI2	KPI3	KPI4	KPI5	Cost
	Activity	Outcome	Outcome	Outcome	Outcome	
Course (x1)	*W11	W12	W13	W14	W15	*C1
The Course Material (Textbooks, Hand-outs, Slides) (x2)	W21	W22	W23	W24	W25	C2
Professor (x3)	W31	W32	W33	W34	W35	C3
E-Learning/ Course Management System (CMS) (x4)	W41	W42	W43	W44	W45	C4

Teaching Assistant / Lab Assistant (x5)	W51	W52	W53	W54	W55	C5

-* W= weighted and *C= Cost

Table 5: Optimal Outcomes

Categories	Cost	Optimal outcomes
Course (x1)	*1,602.0	*8,010
The Course Material (Textbooks, Hand-outs, Slides) (x2)	445.0	2,225
Professor (x3)	1,424.0	7,120
E-Learning/ Course Management System (CMS) (x4)	445.0	2,225
Teaching Assistant / Lab Assistant (x5)	890.0	4,450

*Optimal outcome for course(x1) = 5*89*18 (number of PM) = 8010

*Cost for course(x2) = 8010 / 5 = 1602.0

Table 6: Weighted Values of KPIs

Categories	KPI1	KPI2	KPI3	KPI4	KPI5	Cost
	Activity	Outcome	Outcome	Outcome	Outcome	
Course (x1)	0.05	0.07	0.13	0.4	0.13	1,602.0
The Course Material (Textbooks, Hand-outs, Slides) (x2)	0.16	0.07	0.10	0.3	0.12	445.0
Professor (x3)	0.03	0.02	0.08	0.4	0.2	1,424.0
E-Learning/ Course Management System (CMS) (x4)	0.3	0.3	0.12	0.07	0.02	445.0
Teaching Assistant / Lab Assistant (x5)	0.04	0.01	0.05	0.4	0.2	890.0

Weighted (KPIs) of Course (x1):

Course (x1) KPI1 = 86/1602 = 0.05

Course (x2) KPI2 = 125/1602 = 0.07

Course(x3) KPI3 = 214/1602 = 0.13

Course(x4) KPI4 = 721/1602 = 0.4

Course (x5) KPI5 = 222/1602 = 0.13.

Note: Similarly of calculating Course (x1) we could get the weighed value of the other SSF categories.

Table 7: Weighted Value of Total Activities and Outcomes

Categories	Activities	Outcomes	Total
Course (x1)	1,602.0	3370	4972*
The Course Material (Textbooks, Hand-outs, Slides) (x2)	445.0	713	1158
Professor (x3)	1,424.0	3055	4479
E-Learning/ Course Management System (CMS) (x4)	445.0	337	782
Teaching Assistant / Lab Assistant (x5)	890.0	2080	2970

The weighted value of outcomes for Course(x1) = aggregation of general valuation relevance (4972) – weighted value of cost (activities) (1602) = 3370. *Total value of general valuation relevance = summation of (strongly disagree) response = 86*1 + summation of (disagree) response = 125*2 = 250 + summation of (Neither agree nor disagree) response = 214*3 = summation of (agree) response = 721*4 + summation of (strongly agree) response = 222*5, the total is = 4972. Note; similarly, of calculating Course (x1) we could get the weighed value of the outcomes for the other KPIs categories.

Table 8: Cronbach's alpha.

Cronbach's Alpha	Cronbach's a Based on standardized items	Number of items	SSF Categories	Squared multiple correlation
0.326	0.385	20	H12, x1	0.567
0.636	0.413	23	H12,x1,x2	0.602
0.546	0.588	40	H12,x1,x2,x3	0.719

0.481	0.521	45	H12,x1,x2,x3,x4	0.734
0.531	0.578	54	H12,x1,x2,x3,x4,x5	0.810

Table 9: Results of correlation analysis

Question No.	Correlation coefficient	p-value	Number of responses
H1	0.069	0.512	89
H2	0.028	0.792	89
H3	0.205	0.053	89
H4	0.196	0.113	89
H5	0.065	0.543	89
H6	- 0.102	0.340	89
H7	0.192	0.072	89
H8	0.086	.423	89
H9	0.051	0.632	89
H10	0.029	0.786	89
H11	0.089	0.406	89
H12	0.991***	0.001	89
H13	0.086	0.420	89
H15	0.138	0.727	89
H16	0.732	0.037	89
H17	0.958	0.006	89
H18	0.228	0.023	89
H19	0.161	0.131	89
H20	0.752	0.034	89
H21	- 0.341***	0.001	89
H22	0.202	0.137	89
H23	0.577	0.060	89
H24	0.305	0.110	89
H25	0.811	0.026	89
H26	0.578	0.060	89
H27	0.428	0.085	89
H28	0.201	0.137	89
H29	0.741	0.035	89
H30	0.299	0.111	89
H31	0.905	0.010	89
H32	0.118	0.167	89
H33	- 0.175	0.100	89

H34	0.427	0.077	89
H35	0.747	0.035	89
H36	0.390	0.092	89
H37	0.233	0.028	89
H38	0.138	0.197	89
H39	0.395	0.091	89
H40	0.160	0.135	89
H41	0.641	0.050	89
H42	0.315	0.003	89
H43	0.261	0.120	89
H44	0.259	0.121	89
H45	0.190	0.075	89
H46	- 0.297	0.112	89
H47	0.849	0.020	89
H48	0.903***	0.001	89
H49	0.604	0.056	89
H50	0.158	0.139	89
H51	0.802***	.002	89
H52	- 0.174	0.145	89
H53	0.395	0.091	89
H54	0.419	0.089	89

***p-value < 0.005 is significant

Table 10, Estimation Weighted Values of KPIs after applying the New Model

Categories	KPI1	KPI2	KPI3	KPI4	KPI5	Optimal outcomes
	Activity	Outcome	Outcome	Outcome	Outcome	
Course (x1)	0.01	0.03	0.08	0.3	0.13	8,010
The Course Material (Textbooks, Hand-outs, Slides) (x2)	0.03	0.02	0.06	0.2	0.12	2,225
Professor (x3)	0.007	0.009	0.04	0.3	0.2	7,120
E-Learning/ Course Management System (CMS) (x4)	0.07	0.12	0.07	0.05	0.02	2,225
Teaching Assistant / Lab Assistant (x5)	0.009	0.006	0.03	0.3	0.2	4,450

Weighted KPIs through SHILP model of Course (x1)
Course (x1) KPI1 = 86/8010 = 0.01
Course (x2) KPI2 = 250/8010 = 0.03
Course(x3) KPI3 = 642/8010 = 0.08
Course(x4) KPI4 = 2884 /8010 = 0.3
Course (x5) KPI5 = 1110 /8010 = 0.13.
Note: Similarly of calculating Course (x1) we could get the weighed value of the other categories KPIs.

Table 11: Estimation of Activities Weighted Values

Categories	Activities	Outcomes	Total
Course (x1)	4972	3038	8,010
The Course Material (Textbooks, Hand-outs, Slides) (x2)	1158	1067	2,225
Professor (x3)	4479	2641	7,120
E-Learning/ Course Management System (CMS) (x4)	782	1443	2,225

Teaching Assistant / Lab Assistant (x5)	2970	1480	4,450

The weighted value of outcomes (3rd GBSCKPIs) for Course(x1) = total optimal outcomes (8010) - aggregation of general valuation relevance (4972) = 3038

Note; similarly of calculating Course (x1) we could get the weighed value of the outcomes for the other categories KPIs

Table 12: Results of SHILP Model

Categories	Benchmarks	Optimal Outcomes
Course (x1)	80%*	62%
The Course Material (Textbooks, Hand-outs, Slides) (x2)	90%	52%
Professor (x3)	80%	63%
E-Learning/ Course Management System (CMS) (x4)	90%	33%

Teaching Assistant / Lab Assistant (x5)	80%	67%

Percent of optimal outcomes Course (x1) = aggregation of general valuation relevance (4972) / optimal outcomes (8010) = 62 %

Percent of (internal Benchmarking) outcomes for Course (x1) collected from centralization campus of CIC at new Cairo location = 80%

*Note; similarly of calculating percent of outcomes Course (x1) we could get the optimal outcomes percent of other categories and benchmarking outcomes percent of the other categories.